

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-053513

(43)Date of publication of application : 05.03.1993

(51)Int.Cl.

G09F 9/35  
G02F 1/1337  
G02F 1/1337

(21)Application number : 03-213621

(71)Applicant : TOSHIBA CORP

(22)Date of filing : 26.08.1991

(72)Inventor : NAKAI YUTAKA  
TAKATO TAKAKI

## (54) PRODUCTION OF LIQUID CRYSTAL ORIENTED FILM

### (57)Abstract:

**PURPOSE:** To allow the application of the liquid crystal oriented film to a large-sized and precise electrode display device by forming stretched parts and shrunk parts on the surface of a high-polymer film by irradiation with an energy beam, thereby producing the excellent liquid crystal oriented film in a short period of time without contaminating the surface and generating static electricity.

**CONSTITUTION:** The surface of the high-polymer film (liquid crystal oriented film) 2 formed on a substrate 1 is irradiated with the energy beam 3. Shrinkage arises in the parts of the high-polymer film 2 irradiated with the energy beam 3 and the shrunk parts 4 are formed.

Stretch arises in the parts not irradiated with the energy beam 3 and the stretched parts 5 are formed. Then, liquid crystal molecules 6 are oriented along the shrinkage direction and stretch direction of the high-polymer film 2 when the liquid crystal molecules 6 come into contact with the surface of the liquid crystal

oriented film consisting of the formed high-polymer film 2. The surfaces of the shrunk part 4 are eventually recessed and ruggedness is generated and, therefore, the liquid crystal molecules 6 are more easily oriented along the ruggedness of the surface of the high-polymer film 2 by an anisotropic effect.

